Department of **Biodiversity, Conservation and Attractions**

GOVERNMENT OF WESTERN AUSTRALIA

PARKS AND WILDLIFE SERVICE

Biodiversity and Conservation Science

Dampier Peninsula Greater Bilby Main Roads offset project

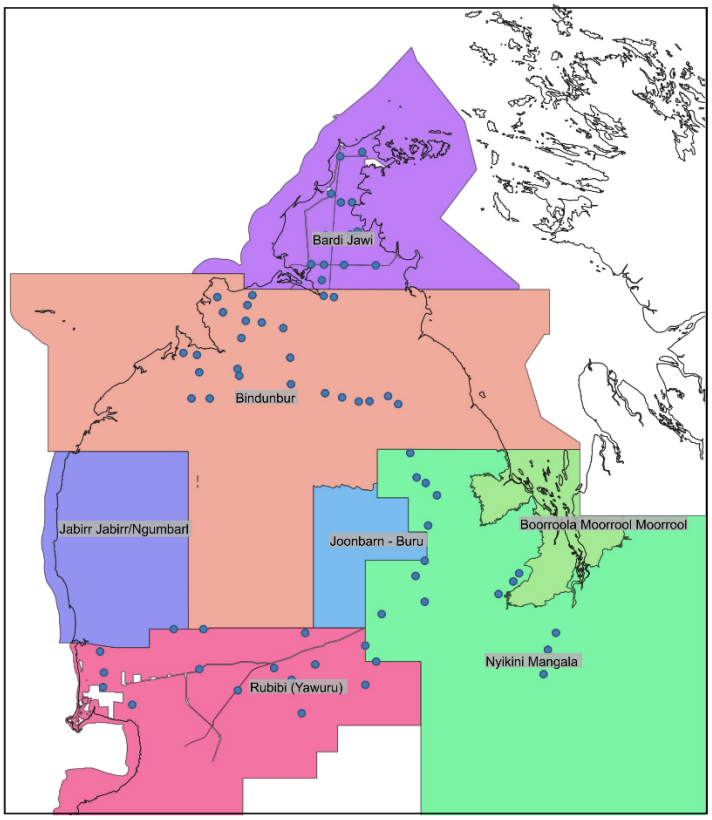
Photo: Bruce Greatwich

The Dampier Peninsula is important country for bilbies

The greater bilby (*Macrotis lagotis*) is a threatened and culturally important burrowing mammal. By digging and turning over the soil, bilbies help to keep country healthy and their burrows create refuges for other animals. Once found across most of Australia, their range and numbers have become much smaller, probably because of predation by feral cats and foxes, wrong-way fire, and habitat loss through introduced herbivores and land clearing. The Dampier Peninsula in the Kimberley is home to the most northwestern wild population of bilbies.

This project, coordinated by the Department of Biodiversity, Conservation and Attractions (DBCA), in partnership with Indigenous Rangers, aimed to:

1) Define the extent of bilby occurrence across the Dampier Peninsula using 69 x 2 ha sign plots.
2) Apply fire management at selected sites.
3) Monitor bilby and introduced predator populations in response to fire management using camera traps and DNA analysis of collected scats

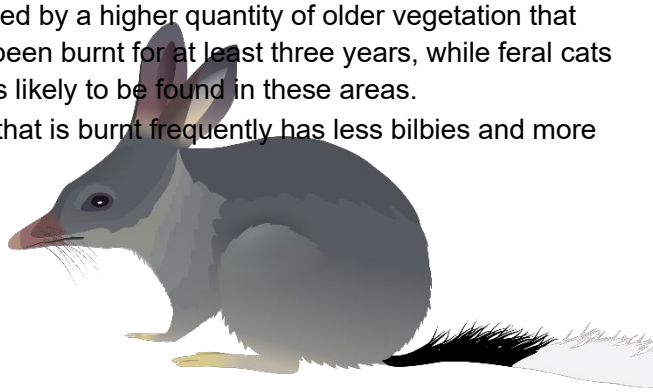


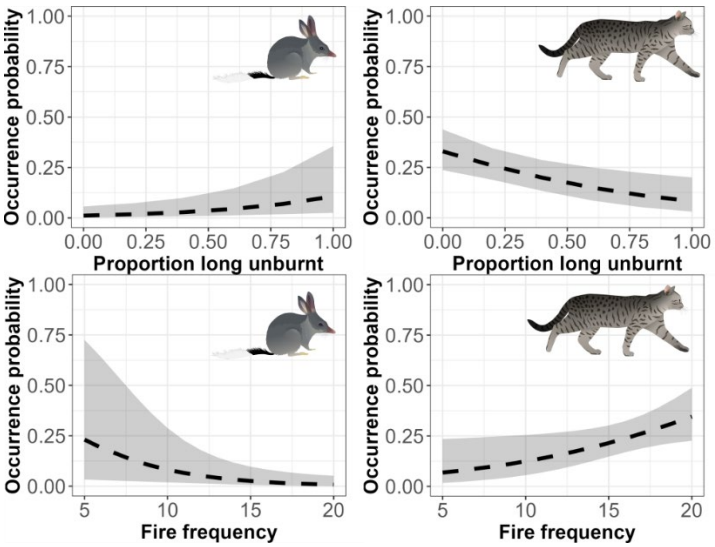
Native Title determinations on the Dampier peninsula. Blue points represent study sites.

Bilby presence declined with increasing fire frequency and extent of recently burnt habitat.

- Bilby presence declined with increasing fire frequency and extent of recently burnt habitat.
- Bilbies were more likely to be found in places that were surrounded by a higher quantity of older vegetation that had not been burnt for at least three years, while feral cats were less likely to be found in these areas.
- Country that is burnt frequently has less bilbies and more cats.

A feral cat investigates an active bilby burrow on the Dampier Peninsula

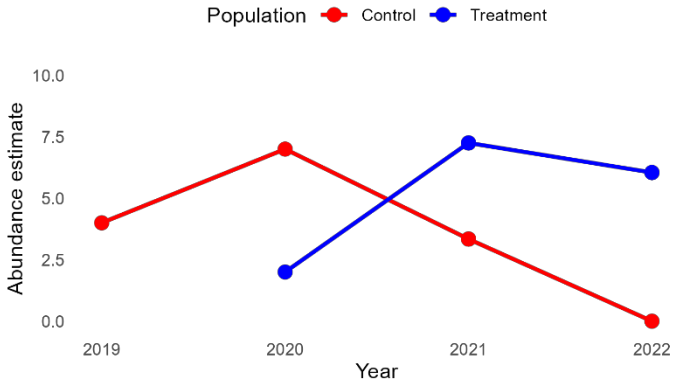




Data analysis showed bilbies are more likely to occur in areas with greater amounts of habitat that has not burnt for at least 3 years, while the opposite was true for cats. Similarly, bilbies are less likely to occur in habitat that burn frequently, while cats are more likely to occur here.

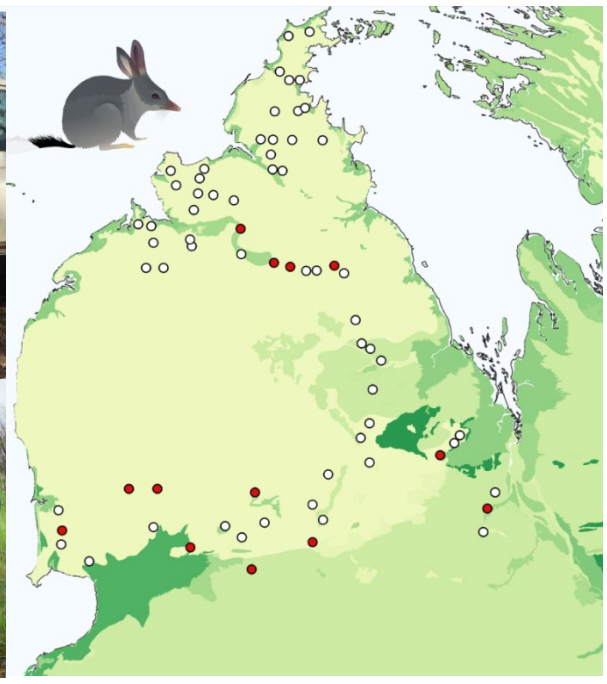
Bilby abundance monitoring

- Monitoring at two sites, one with fire management and one without, suggested that the number of bilbies at the site with no management decreased between 2019 and 2022.
- At the site where fire was managed, bilby numbers increased and remained relatively stable.
- Only a small number (2-8) of bilbies were found at both sites across the three years of monitoring.
- Persistence of bilbies at the managed site may be because our fire management (early dry season fire) helped to reduce the impact of late dry season wildfires.
- The unmanaged site had two late dry season fires, leading to significant vegetation changes and likely bilby disappearance from the site.



Abundance estimates from the treatment and control bilby populations between 2019 and 2022.

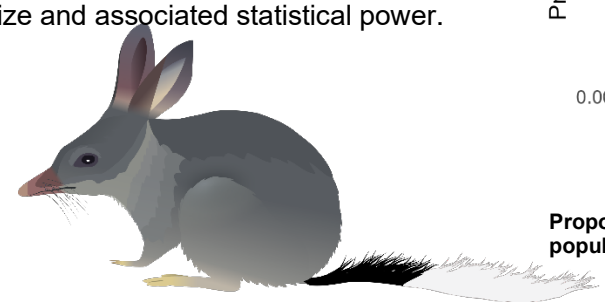
Groups involved in surveying a total of 259 sites across the Dampier Peninsula for the presence of bilbies, feral cats, dingoes and livestock. a - Yawuru Country Managers, b - Bardi Jawi Oorany Rangers, c - Nyul Nyul Rangers, d - Nykina Mangala Rangers

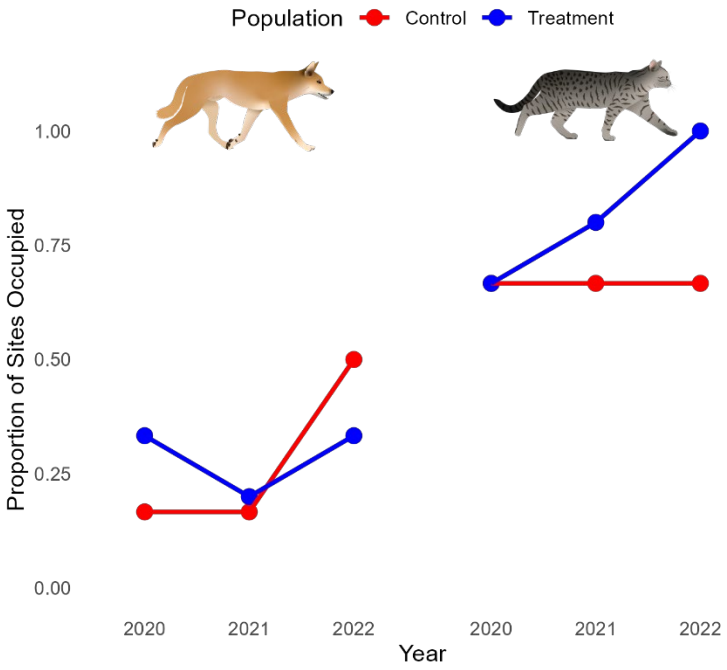


Bilby occurrence data collected using 2-ha plot surveys on the Dampier Peninsula in 2019. Red dots represent presence recorded whilst white dots represent absence across the four survey visits.

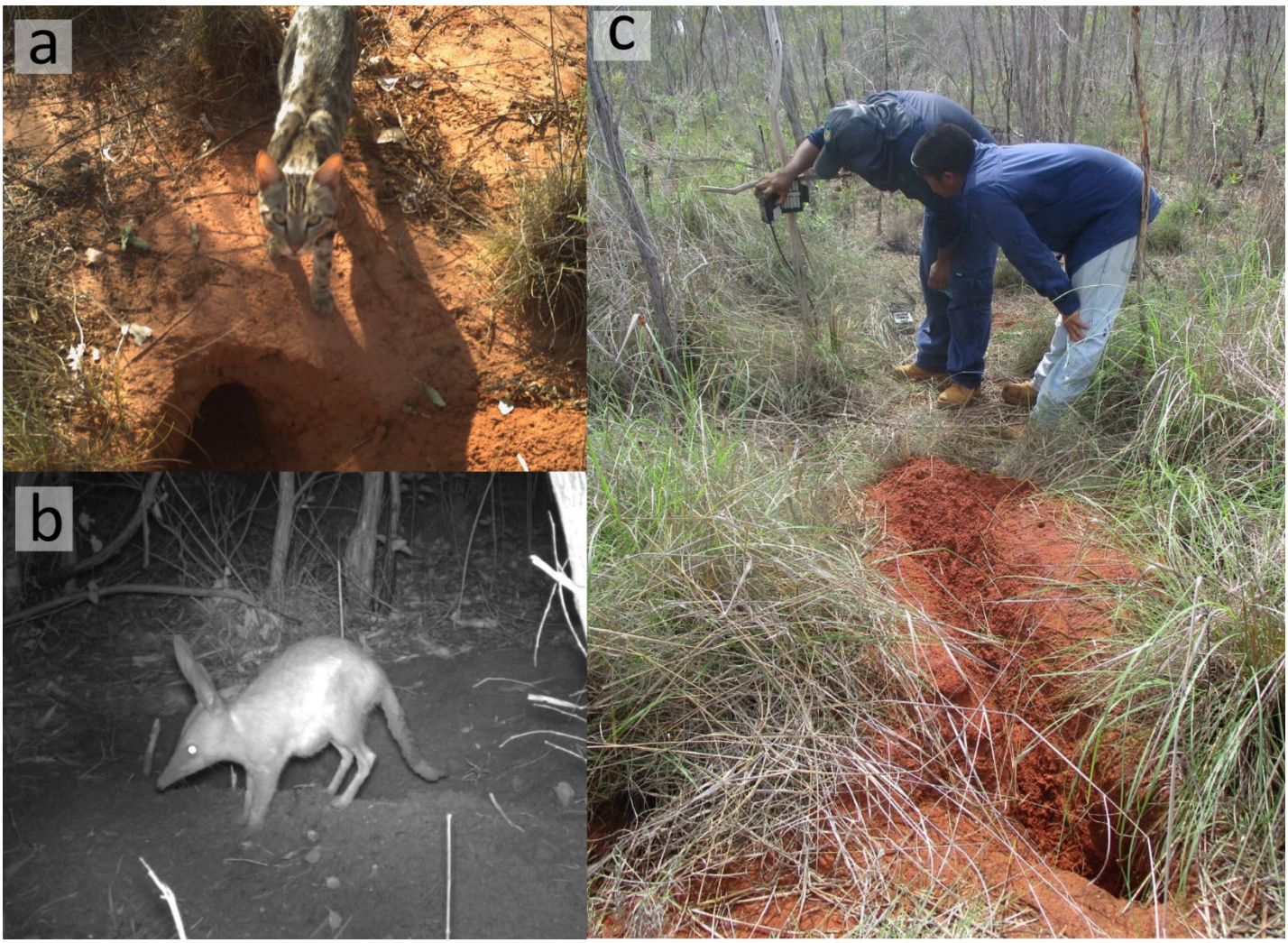
Predator monitoring

- Camera trap data collected between 2020 – 2022 showed feral cats were common across both control and treatment bilby populations.
- Dingoes were less common.
- However, no significant differences in dingo or cat occupancy were observed between the treatment and control populations, although cat occupancy did increase slightly.
- It is possible that an effect was present but went undetected due to the limitations of our sample size and associated statistical power.





Proportion of sites occupied by predators at both treatment and control populations.



a – A feral cat investigating an active bilby burrow, b – A bilby emerging from its burrow, c – Yawuru Country Managers installing a remote sensing camera at an active bilby burrow to monitor predator activity.

Management implications

- Our research shows the importance of decreasing the fire frequency and increasing the amount of long unburnt habitat (> 3 years) to create good habitat for bilbies and to help protect them from feral cats on the Dampier Peninsula.
- Based on results, increasing the proportion of long unburnt habitat across the whole of country from 20% to 60% can almost triple the chance of finding bilbies, while almost halving the chance of finding feral cats.
- Reducing fire frequency from once every year to once every ~4 years more than doubles the chance of finding bilbies, and halves the chance of finding feral cats.
- These targets align directly with objectives established by the Dampier Peninsula Fire Working Group (DPFWG).
- The DPFWG is a coordinated fire planning group which brings together Traditional Owners, Indigenous ranger groups, government agencies, regional conservation groups, non-profit organisations, the pastoral and natural resources industries, and scientific experts to work collaboratively to improve fire management on the Dampier Peninsula.

An example of low fire intensity used for strategic fire management and Yawuru Country Managers undertaking early dry season burning.

DBCA fire staff and Yawuru Country Managers preparing for strategic burns at bilby population sites.

This project was funded by Main Roads WA and implemented by the Department of Biodiversity, Conservation and Attractions as an offset from the approval of the Cape Leveque Road Upgrade proposal SLK 25-102.6